REMARKS

Claims 1-12, 16 and 17 are pending in the instant application, and all of the pending claims are rejected. Claims 1 and 10 are amended herein. In claim 1, the further recitation "to form a monolayer of the polymeric material over at least a portion of said substrate" is added. Claim 10 is changed to depend from claim 5, and the recitation of "PEG" is removed.

The Examiner did not enter the Amendment because the alleges that the language "to form a monolayer of the polymeric material over at least a portion of said substrate" raises issues that would require further consideration or search.

On a substantive note, the Examiner does provide some response to our arguments. The Examiner notes that our arguments would not place the application in condition for allowance because the invention as claimed is not limited to the substrate treated with timethoxy silane shown in Figure 3. The Examiner also notes that Feder's coating composition on curing may have unreacted amino groups and/or hydroxyl groups which can react to the hydroxyl groups present on cork substrate since Feder does not teach or suggest to react alpha-omega dihydroxyl polydimethyl siloxane with equivalent amounts of amino and/or amido silane so that no reactive groups hydroxyl and/or amino or amido groups are present to react with the reactive groups present on the substrate.

Rejection under the judicially created doctrine of obviousness-type double patenting

The Examiner maintains the ***provisional*** rejection under the judicially created doctrine of obviousness-type double patenting over claims 13-25 of copending Application No. 10/826,143. Applicants reiterate their willingness to file a Terminal Disclaimer to overcome the rejection upon notification of allowable subject matter.

Rejection under 35 U.S.C. 112, first paragraph

In response to Applicants' Amendment of October 24, 2005, the Examiner rejects claims 1-8, 10-12, 16 and 17 as not being properly described in the specification. The Examiner says

that there is no support in the specification for the phrase "first functional groups are terminal reactive groups or reactive groups not directly linked to the polymer backbone." Applicants previously explained that the compounds disclosed in the specification inherently have this feature since the phrase does not appear in the specification. The Examiner is not persuaded that the compounds inherently have this feature because, for instance, in Example 6, neither polyvinyl acetate nor polymethylhydrogen siloxane have terminal reactive groups or reactive groups not directly linked to the polymer backbone. Moreover, the Examiner further rejects the claims based upon the recitation "reactive groups not directly linked to the polymer backbone." In the interest of advancing prosecution, Applicants herein delete the phrase 'wherein said first functional groups are terminal reactive groups or reactive groups not directly linked to the polymer backbone, and' from claim 1. This recitation is not needed to distinguish the present invention from the prior art in view of the latest amendment to claim 1.

Rejection under 35 U.S.C. 112, second paragraph

In response to Applicants' Amendment of October 24, 2005, the Examiner rejects claim 10 as not being clear. The Examiner says that it is not clear how silanes or siloxanes are functionalized with polyethyleneglycol to have polyethyleneglycol functional groups. Applicants herein delete "polyethyleneglycol" thereby obviating the rejection.

Rejection under 35 U.S.C. 102(b)

The Examiner maintains the rejection of claims 1-8, 11, 12, 16 and 17 over Feder, U.S. Patent 5,140,061. Applicants previously explained that there is ***no teaching or suggestion*** that the product of Feder comprises ***reactive groups that are free to react with flavor-active or odor-active taint compounds***. The Examiner maintains the rejections of record summarized as follows:

1. The reaction product of Feder contains -NH groups that could react with flavor-active or odor-active taint compounds, and the data presented does not show that Feder's crosslinked elastomer having -NH does not react or is not accessible to the trichloroanisole molecule; and

2. Rosalind Ma's declaration shows reactivity of silanes not the polymers as argued, and there is no showing that all the polymers within the scope of the claims have reactive groups that react with trichloroanisole.

Further, the Examiner maintains that the silicone elastomer produced by the reaction of an alpha-omega-(dihydroxy) polydiorganosiloxane and an amino silane and/or amidosilane is deemed to have either $-NH_2$ or -NH groups unless shown otherwise. In addition, the Examiner maintains that the silicone-elastomer is deemed to have residual hydroxyl groups from either alpha-omega-(dihydroxy) polydiorganosiloxane and/or from hydrolyzed aminosilane and/or amidosilane unless shown otherwise.

Applicants submitted previously a Declaration of Nicola Lake on October 24, 2005 setting forth that the amino groups of Feder are not accessible to a taint compound such as trichloroanisole because the amino groups of Feder are directly linked to an Si atom of silane. The Examiner is not persuaded by this Declaration because there is no data provided demonstrating that the coating of Feder does not react with trichloroanisole. According to the Examiner, Feder's coating may have residual -OH groups in addition to -NH groups that may be terminal groups and may react with trichloroanisole.

The teachings of Feder

Feder teaches preparing a silicone elastomeric seal which, once formed, is likely to be rubbery in nature. Feder specifically teaches using amino and/or amido silanes to cross-link a (dihydroxy)polydiorganosiloxane such as (dihydroxy)polydimethylsiloxane (PDMS) (Figure 1). Once an amino or amido silane is used as a cross-linking agent, the resulting polymer has a structure as shown in Figure 2 (depending upon which amino or amido silane was utilized, noting that Figure 2 uses methyl-tris(n-phenylaminosilane), the phenyl groups of which are cleaved during cross-linking to produce the illustrated structure). The polymer can be matured with a metal curing catalyst and/or dried by addition of a filler. The present invention, as defined in Claim 1, requires a *first functional group* which must be capable of reacting with flavour-active or odour-active taint compounds such as trichloroanisole (TCA). The Examiner maintains that the amino (or amido) groups of the above exemplary compound would react with TCA and that Feder therefore discloses the present invention. Applicants do not acquiesce that this is true, however, in the interest of expediency, Applicants turn to distinguishing the present invention on yet other grounds.

Claim 1 of the present invention also requires that the polymer has a *second functional group* which reacts with said substrate (i.e. the cork). Applicants further explain herein that ***the Feder polymers do not have a second functional group which reacts with the substrate onto which it is applied.***

The present invention

The polymers claimed in the present invention are functionalized silanes and siloxanes. The claims presently pending recite that the first functional groups are at the terminus of the polymer chains (or, at least, not directly linked to the polymer backbone), and therefore the first functional groups are readily accessible to taint compounds such as TCA.

In comparison to the coating provided by Feder, the surface of a cork modified by the present invention would appear as a monolayer of polymers over at least a portion of the surface, as shown in Figure 3. Preferably, the carbon chain shown is a silane or siloxane chain as presently recited in Claim 1.

It is an option that the surface of the cork be modified with, for example, polyethyleneglycol (PEG) or epoxysilicone to provide a substrate to which the silane (or siloxane) preferentially binds (i.e. a surface covered with more hydroxy groups than are present on the surface of cork). To this end, Example 1 of the present specification clarifies that, once the glass wool (used as a model for cork) is coated with PEG, a silane monolayer is then formed on the PEG layer.

It is also an option that the surface also be coated with a polyvinylacetate (PVA) and/or polydimethylhydrogen silicone (PMHS) as described in Example 6. These polymers are used in conjunction with a silane compound. The PVA and PMHS provide a food grade coating and a waterproof coating respectively. The PVA and PMHS act synergistically with the silane to coat the cork.

Applicants submit that it is clear from Figure 3 that the alkoxy groups of the silane (in the above case methoxy) are reactive with the OH groups of the substrate. The second functional

groups of the present invention are crucial in orienting the reactive groups of the polymer in order that they can efficiently remove flavour-active or odour-active compounds. The reaction with the surface is inherent in the chemistry of the polymer and one of ordinary skill in the art would identify that the polymers of Examples 2, 3, 4 and 5 would react with the substrate in the way depicted in Figure 3.

By way of contrast, the silicon atoms of Feder are bound into the polymer structure and are not free to bind with the cork substrate. Accordingly, ***the polymers of Feder do not comprise a second functional group that reacts with the substrate as required by Claim 1 of the present application.*** The amino groups of Feder are therefore not oriented in such a way as to make them useful for removing the necessary amount of flavour-active or odour-active compounds.

Applicants miscommunicated in the Amendment and Response filed on June 25, 2004. In that Amendment and Response, on page 7, Applicants stated that

> "Feder does not disclose a flavour or odour retentive compound comprised of a polymer having two distinct groups. Rather, Feder teaches elastomeric compounds, produced by cross-linking aqueous silicone dispersions that have been chosen specifically to prevent liquid from running between the neck of the bottle and the stopper (col 8, lines 59 to 62). Such a cross-linked silicone product corresponds to the second functional group component of Applicant's invention..."

In fact, ***the cross-linked silicone product does not have a component which corresponds to the second functional group of the present invention.*** The silicon atoms in the Feder siloxane polymer are not able to react with the substrate because the silicon atoms are not attached to hydrolysable groups (See, Figure 4).

The amino groups of the Feder polymer have already been hydrolysed and are no longer hydrolysable. While there may be some terminal OH groups remaining in the Feder polymer that might possibly react with the substrate, these groups are likely to be very few and far between and will not produce a monolayer arrangement similar to that depicted in Figure 3. In this regard, Applicants submit that no issue regarding inherency arises in this context because an anticipating feature or result must be consistent, necessary and inevitable, and not merely

possible or even probable, from the teachings of the prior art in order to support a rejection based upon inherent disclosure. (*See, Transclean Corp v. Bridgewood Services, Inc* 290 F.3d 1364 (Fed Cir 2002).

Regarding Comments in Advisory Action of April 11, 2006

Applicants respectfully submit that the Examiner misunderstands that Figure 3 is merely intended to be an exemplary compound demonstrating one compound that would fall within the scope of claim 1 as amended. While compounds having trimethoxy silane groups will react with the substrate, other polymeric materials which have functional groups that react with the substrate may be used, for example, compounds having carboxylic acid groups (or similar) will electrostatically react with the substrate. Instead of limiting the functional groups that react with the substrate, the polymers have been limited to those that form a monolayer of the polymeric material over at least a portion of the substrate.

In response to the Examiner's comments regarding the preparation of Feder's coatings, Applicants refer the Examiner to Feder, at column 5, lines 37 to 39 wherein it is made claear that the silanes (and their products of partial hydrolysis) serve as cross-linking agents in the aqueous silicone dispersions. There is no teaching that the silanes or the siloxanes form a monolayer over the surface of the substrate. Instead, by using the silanes as cross-linkers, the skilled artisan would expect that the silanes and siloxanes were consumed during preparation of the coating of Feder. This in fact teaches away from there being free reactive groups capable of reacting wit h the substrate to form a monolayer.

Applicants respectfully refer the Examiner to Example 1 of Feder where 100 parts of the siloxane emulsion are stirred with (among other things) 4.1 parts of a silane. Clearly, these specific amounts are intended to provide for a chemical reaction in whicht the amount of cross-linker required to link siloxane molecules has been determined. There is no teaching or suggestion of an excess of one compound or the other. Notwithstanding this, if there were free hydroxyl and/or amino/amido groups, then these are likely to be part of large, bulky, partially cross-linked molecules that are incapable of forming a monolayer over the substrate. Instead, any reaction of such bulky groups with the substrate is likely to result in a random dispersion of

the molecules, which would not have functional groups optimally positioned for reaction with flavour or odour active compounds.

Fees

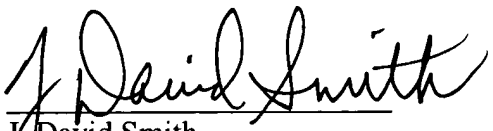
It is believed that no fees other than those submitted are due in connection with the instant Response. However, should this understanding be erroneous, authorization is hereby given to charge Deposit Account No. 11-1153 for any underpayment, or to credit any overpayments.

CONCLUSION

Applicants respectfully request entry of the foregoing Amendments and Remarks into the file history of the instant Application. The Claims as amended are believed to be in condition for allowance, and withdrawal of all of the outstanding rejections is therefore believed in order. Early and favorable action on the claims is earnestly solicited. Should a discussion be helpful in resolving any outstanding issues, the Examiner is invited to telephone the undersigned at (201) 487-5800.

Respectfully submitted,

KLAUBER & JACKSON



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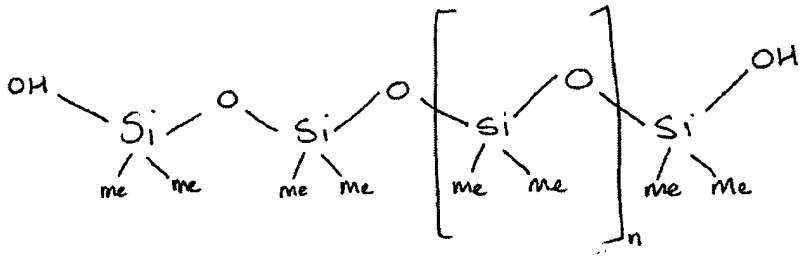

Figure 1: Structure of (dihydroxy)polydimethylsiloxane (PDMS)

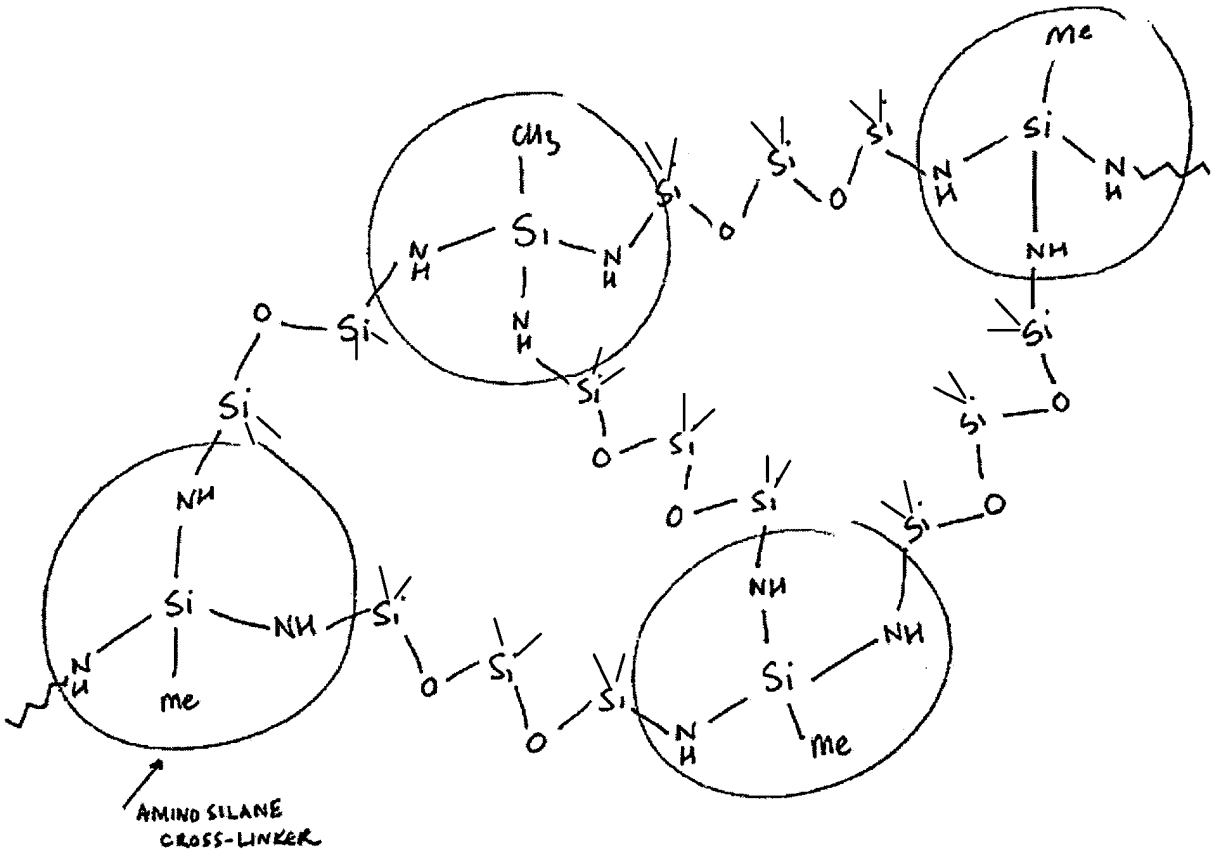

Figure 2: An exemplary structure of the cross-linked polymers disclosed by the Feder patent

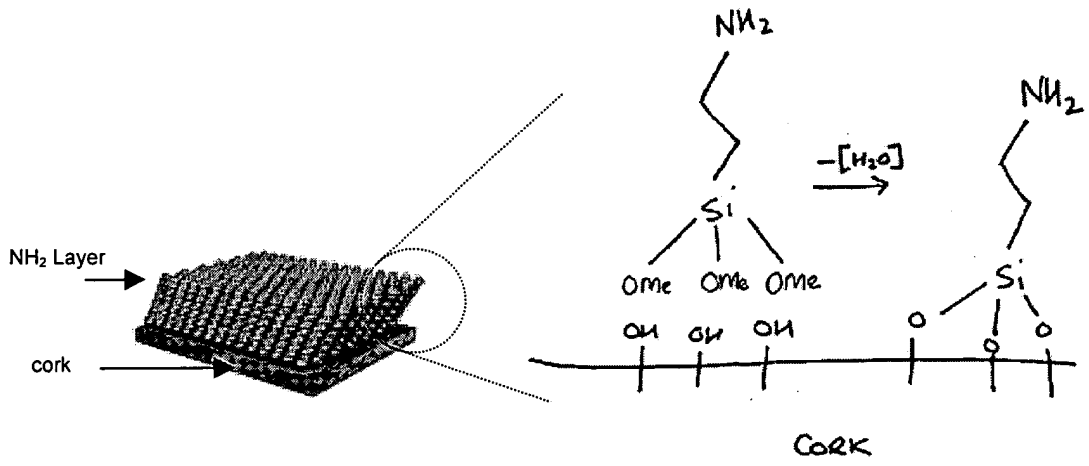

Figure 3: Monolayer of polymers as disclosed and claimed by the present invention

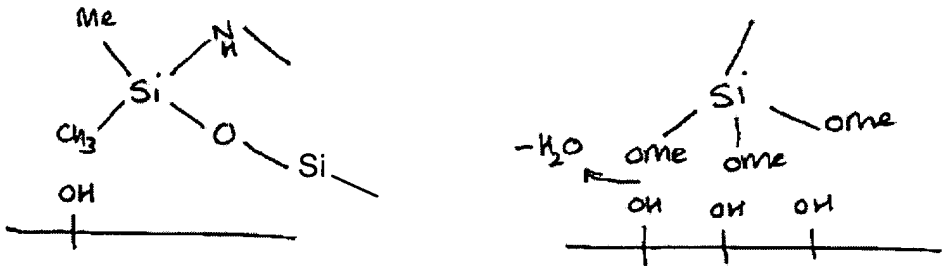

Figure 4: The difference between the functional groups described by Feder (left-hand diagram) and the functional groups disclosed in the present application (right-hand diagram)